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1. INTRODUCTION

The machine is initially packed for dispatch from the factory in a cardboard container, known as the 'inner' case and, dependent upon the final destination and/or method of transportation, this inner case may be packed in an additional outer case. Paragraph 2.2 caters for unpacking either method.

2. UNPACKING AND PRE–INSTALLATION PREPARATION

2.1 Stand the packing case with its base on the floor, as indicated by the 'wine-glass' symbol and by the position of the two handles on the sides of the case.

2.2 Cut and remove the two straps binding the case. Cut the adhesive paper tape sealing the lid flaps. Open the lid, if it is evident that the case contains a second (*inner*) container supported by moulded corner pieces, the four top corner pieces must be removed and the inner container withdrawn from the outer. If however a cardboard fitting is seen beneath the opened lid, the machine is packed in an inner container only and the unpacker may continue with the next operation.

2.3 Refer to fig. 2.1. Remove the flat cardboard fitting, Item 1 covering the machine.

2.4 Remove the cardboard box, package and mains and signal cables from the recess in Item 2 and place on top of the machine Remove Item 2.

2.5 Remove the cardboard packing, Items 3 and 4.

2.6 Remove the expanded polyethylene cushions, Items 5, from either side of the machine. Remove the rebated cushions, Item 6, from either end of the machine.

Note: It is recommended that two persons be employed for the following step.

2.7 Two webbing straps, Item 7 are fitted to the wooden base on which the machine is secured. With each person holding a strap, carefully lift the machine from the case.Ensure that the machine is placed on a support rigid enough to carry it.

2.8. Remove the polythene bag covering the machine.

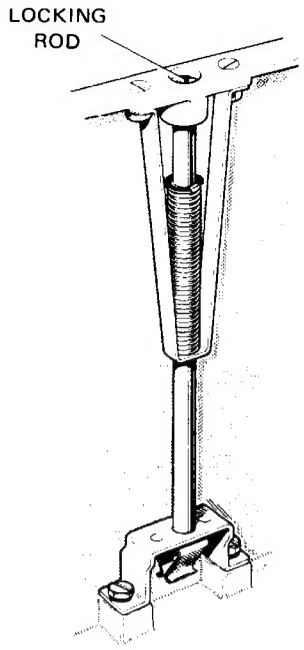

Fig. 2.1 COVER SECURING ROD

2.9. Open the hinged top of the cover to gain access to the two spring loaded locking rods Fig. 2.1 which secure the cover to the base tray. Turn each locking rod a quarter of a turn to disengage the cover and lift the cover clear of the machine.

2.10 Check that the cardboard box and package removed in operation 2.4, contains the following:

Ribbon and two spools
Paper roll bar
Platen knob
Message desk *(lectern)*
Alternative gears *(if supplied)*
Tape reel centre

2.11 Remove the paper covering the platen.

2.12 Tilt the machine on its side and locate three transit bolts in the wooden base, one at the rear attaching the wooden base and base tray to the motor and two at the front of the machine securing the wooden base to the base tray. Unscrew the rear transit bolt, replace the machine in its normal position.

2.13 The machine is secured to the base tray by two sliding catches, one on the left-hand side and one on the right-hand side of the machine. To disengage the machine from the locating studs on the base tray first disconnect the power and

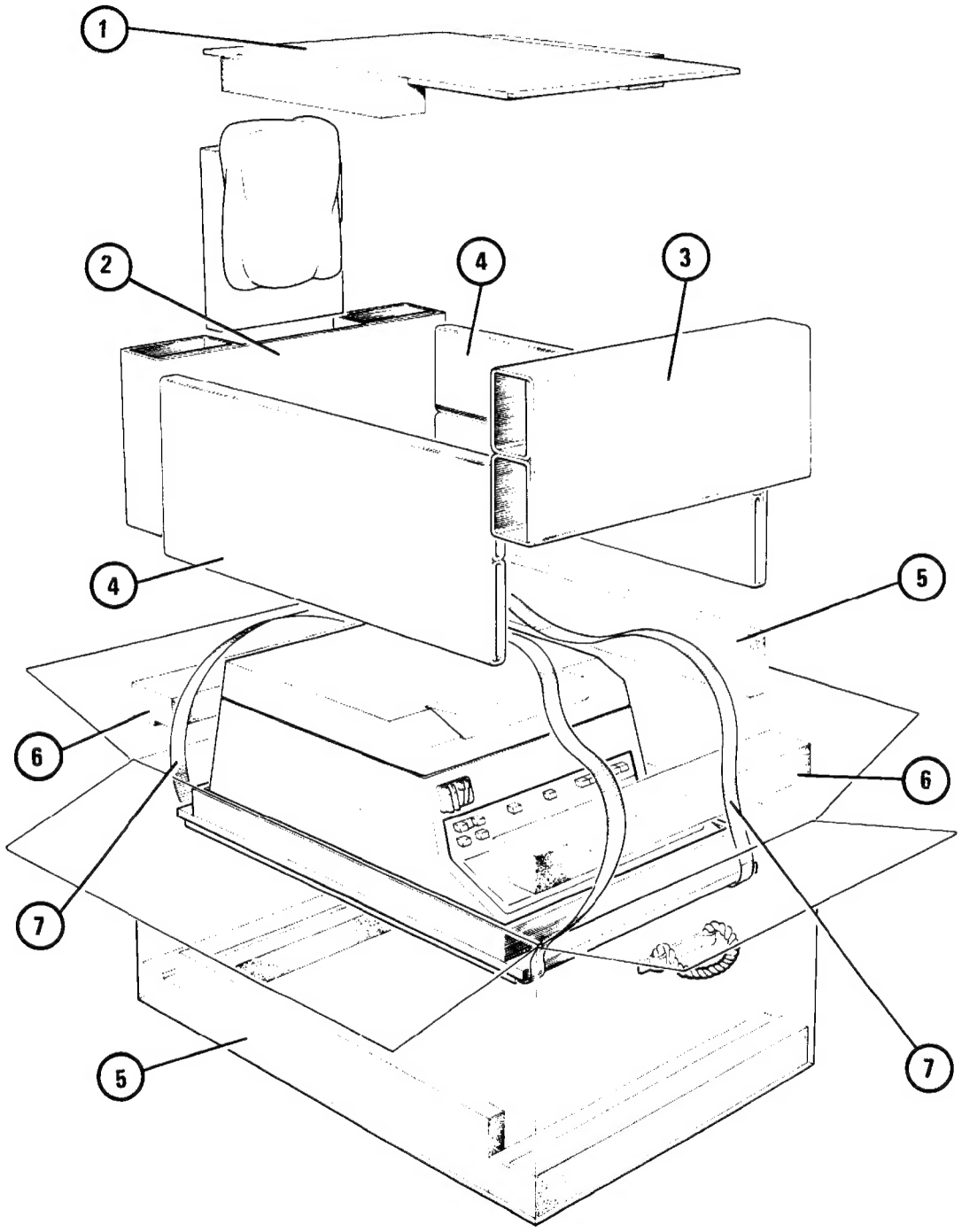

Fig. 2.2 UNPACKING PROCEDURE

signal cords then release the sliding catches by pushing the right-hand one backwards and pulling the left-hand catch, Fig. 2.3 forward. The machine is now free and can be removed by gripping the lifting handles and lifting vertically upwards. If the sliding catches are difficult to move press down on the side frame adjacent to the sticking catch to relieve the pressure of the coil spring, which lies between the base casting and the tray.

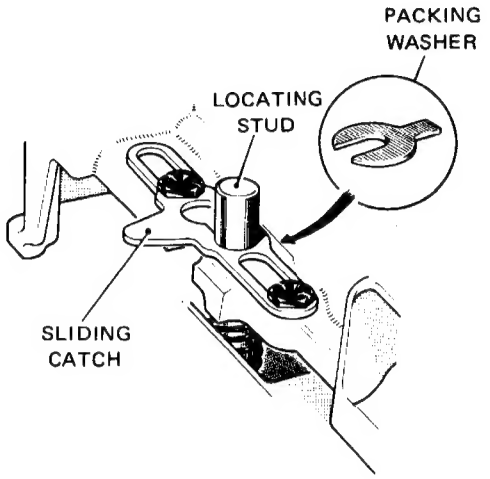

Fig. 2.3 MACHINE SECURING CATCHES

2.14 Remove the wooden base secured to the base tray by the two remaining transit bolts; two packing washers fitted beneath the two locating studs will now be free and must be removed from the base tray.

2.15 If it is necessary to assemble power and signal cords; remove the cable cleat Fig. 2.4, which is secured by two bolts. This will enable the cable shield to be lifted clear of the base tray, thus uncovering the cable entry aperture.

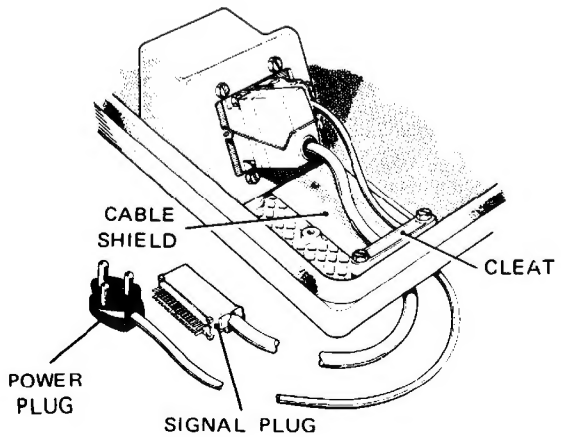

Fig. 2.4 SIGNAL AND POWER PLUGS

2.16 When reconnecting the power and signal plugs to their sockets located on the main base, route the cable cords through the aperture in the manner illustrated. Replace the cable shield and fit the cable cleat to secure the cables to the base tray.

2.17 Mount the machine on the base tray by lowering it on to the two locating studs, Fig. 2.3, projecting from the tray. Locate the slotted part on each side of the base casting, to rest on the coil spring around the pillars. Press down on the right-hand side frame to bring the horizontal groove in the pillar in line with the catch, and then pull the catch forward. Press down on the left-hand side frame to bring the horizontal groove in the pillar in line with the catch, and then push the catch backwards in order to lock.

2.18 Inspect the mechanism and ensure that no part(s) has/have been damaged or worked loose in transit.

2.19 Load the machine with a paper roll, using the paper roll bar supplied with the machine, in accordance with the Operating Instructions.

2.20 Fit the two ink ribbon spools, supplied with the machine, and the ink ribbon in the manner recommended in the Operating Instructions.

2.21 Load the tape punch with a new reel of paper tape as described in the Operating Instructions.

2.22 Inspect the mechanism and ensure that it is adequately lubricated. All machines are fully lubricated before leaving the factory but, if the machine has been stored for a long period before use, there is a possibility that some oil may have been lost. When installing a machine that has been in storage for over six months, carry out the Lubrication Instructions given in Equipment Manual 444, Part 3.

Note: If the machine is to be installed immediately then ignore operations 2.23 to 2.25 at this stage.

2.23 Replace the cover and secure it with the two locking rods Fig. 2.1. These should be turned so that the slot is parallel with the side of the cover, then pushed straight down.

2.24 Push the platen knob on to the platen spindle, and close the lid.

2.25 Fit the lectern to the front of the cover Fig. 2.5, making sure that the lectern is correctly fitted.

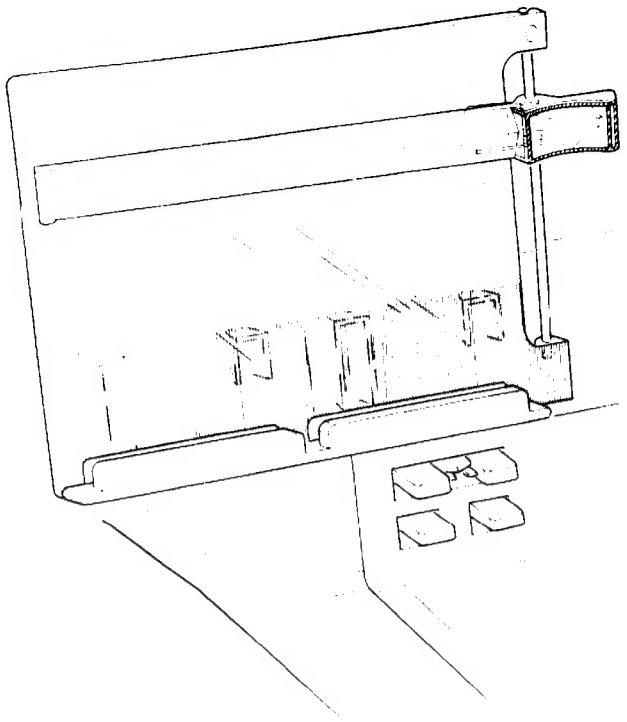

Fig. 2.5 LECTERN ON FRONT OF COVER

3. INSTALLING A MACHINE

3.1 If necessary remove the cover.

3.2 If the machine is supplied with a set of alternative gears, check that the correct set is fitted to the layshaft, motor shaft and to the hours counter. If necessary, change the gears as described in the Operating Instructions.

3.3 Turn the mechanism over by hand to ensure that all parts of the mechanism are free to move without evidence of binding.

3.4 Ensure that the power supply corresponds to that on the motor and that the signal cord is suited to the line circuit. Check that the dashpot lever (identified in Fig. 2.9) is fully counter-clockwise.

3.5 Connect the line and signal cords. Check that the main base is earthed. Switch on the power supply. If a governed motor is fitted, check the motor speed according to the instructions in Part 4, Section 2.

3.6 The machine may now be tested in 'local' with the signal cord connected. During this test, check the operation of all printing characters and machine functions. Check that the length of any printing line is suitable for the circuit on which the machine is to be used and, if necessary, re-adjust the line length as detailed in the Operating Instructions.

3.7 Carry out the following margin check procedure:

(a) Using a TDMS or similar signal generator, transmit an undistorted message.

Note: If a normal tape transmitter is used in place of a signal generator, allowance must be made for signal distortion.

(b) Slacken locking screw Fig. 2.6 and turn orientation knob slowly clockwise until the lowest value is obtained for which the receiver correctly prints a minimum of two full lines. Record this setting.

(c) Turn orientation knob counter-clockwise and obtain the highest value for which the receiver correctly prints a minimum of two full lines. Record this setting.

Note: When obtaining these two settings, the locking screw should be tightened and the backlash in the orientation knob taken up in the same direction when reading each value.

(d) Slacken locking screw and turn orientation knob to the mid-point of the two values obtained above, backlash must be taken up in the same direction as before. Tighten locking screw.

(e) Slacken clamp screw and turn pointer plate until the pointer is at '60'. Tighten clamp screw.

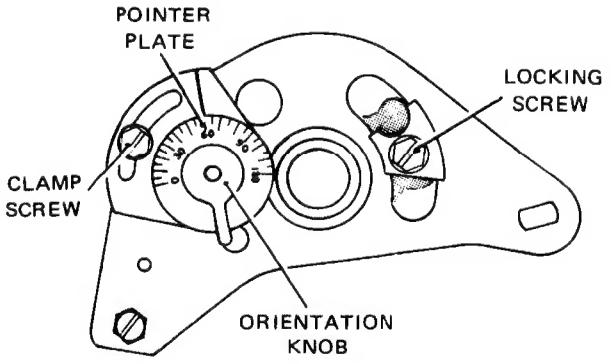

Fig. 2.6 SELECTOR UNIT

3.8 The machine is now ready for an operational test with a distant station. Check that the line current does not exceed 20mA and that the line voltage is 80 - 80V. During this test ask the distant operator to transmit 'RY' continuously. Refine the margin check as detailed in paragraphs 3.7 (b) to (e) above.

3.9 If the operational test cannot be carried out with the distant station but another teleprinter known to be in working order is available, treat this second machine as a test set and link it up to the machine to be installed. All units of the machine to be installed can be tested and an approximate line-up obtained by carrying out the procedure outlined in paragraphs 3.7 (b) to (e) above, with the second machine acting as the distant station. If this method of testing is used, the line-up procedure may need to be refined when the machine is finally connected to the distant station.

3.10 Replace the cover and secure it with the two locking rods.

3.11 Push the platen knob on to the platen spindle and close the lid.

3.12 Fit the lectern to the front of the cover Fig. 2.5, ensure that the lectern is correctly fitted in the required position.

3.13 Ensure that the operator is familiar with all controls and is sufficiently competent to successfully operate the machine.

4 Coding of Answer Back Unit

The drum of the answer back unit can be coded to carry up to 20 pre-set characters or functions. To code a new drum refer to Fig. 2.7. and note that the five tines at position 'a' incorporate the code of the first character of the sequence. With all five tines intact this code is all-space, but it can be modified to suit a specific character by breaking off those tines relevant to the mark positions (1 – 5) of the code representing such a character. For the remaining characters in the answer back message, work against the direction of the arrow, and continue breaking off the tines at each relevant mark position on each succeeding character group (b, c, d etc).

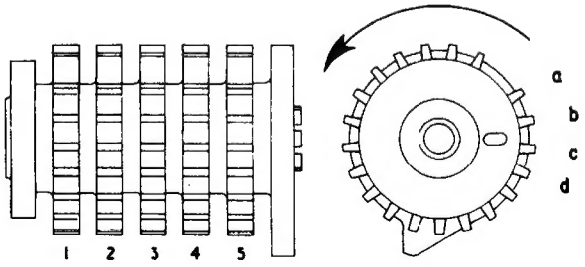

FIG. 2.7. ANSWER BACK UNIT

5 Motor Control Switch

5.1 If the machine is equiped with a Motor Control Switch check that the cut-out lever, Fig. 2.8, is correctly positioned for the type of operation required. The lever should be fully to the rear for auto-start inhibition or fully to the front for auto-start operation.

5.2 The lever can be moved either by pushing on the rear end with a screwdriver or by pulling from the front with a spring hook over the projection which operates the reset trip lever.

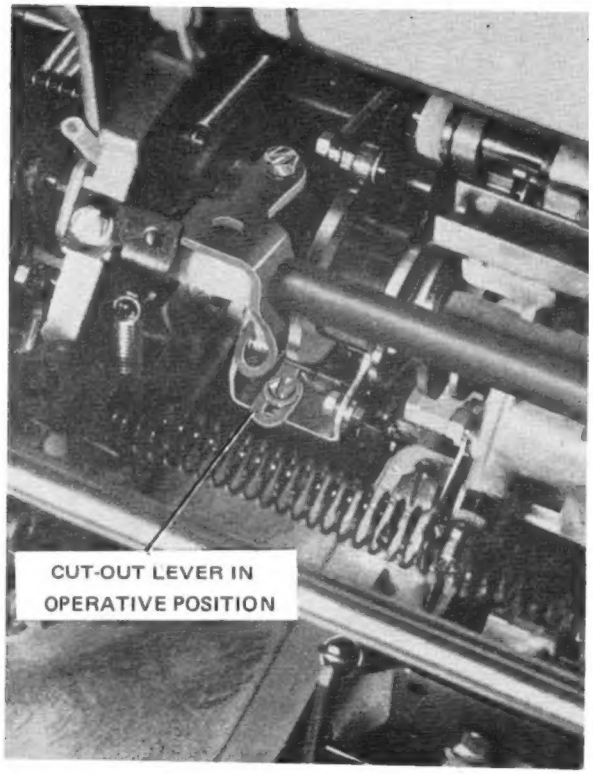

FIG. 2.8. MOTOR CONTROL SWITCH CUT-OUT LEVER

SECTION B – OPERATING INSTRUCTIONS

1. CHANGING THE SPEED OF THE MACHINE

Interchangeable gears fitted between the motor and layshaft, and hours counter and feed unit determine the machine's working speed. The following table lists the Part Nos. and main dimensions of the appropriate gears that are relevant to 50 or 75 baud working for machines fitted with governed or synchronous motors.

2. If it is desired to change the operating speed of the machine, the appropriate gear combination is fitted as follows:

2.1 Switch off the motor power supply. Remove and retain the motor gear cover secured to the layshaft by a 4BA screw.

2.2 Remove the screw securing the gear to the layshaft and withdraw the gear.

2.3 Remove the screw securing the pinion to the motor shaft and withdraw the pinion.

2.4 Remove the two screws securing the gear to the hours counter and withdraw the gear.

2.5 Remove the screw securing the pinion to the feed unit and withdraw the pinion.

2.6 Refer to the above table and select the appropriate gears as required.

2.7 Fit the correct gear and pinion to the layshaft and motor shaft respectively and secure with their screws, ensure that the gears and pinions mesh correctly with a small amount of backlash. Replace the motor gear cover.

2.8 Fit the correct gear and pinion to the hours counter and feed unit repectively, ensure that the gear and pinion mesh correctly.

2.9 Adjust the machine according to the relevant instructions in Part 4.

2.10 Lubricate the gears according to the instructions in Part 3.

2.11 Function test the machine according to the relevant instructions in Section A, Paragraph 3.

3. ADJUSTING THE PRINTING LINE LENGTH

Ensure that the machine being installed has a similar printing line length as other machines connected to the same circuit. Where necessary fit the appropriate feed rack for the required line length. The racks are directly interchangeable and can be fitted as described in Part 5, however certain re-adjustments must be made and these are detailed in Part 4.

4. RE-LOADING THE MACHINE WITH PAPER

4.1 Switch off the power to the machine and disconnect the supply plug from the socket.

4.2 Raise the top of the machine cover.

4.3 Turn the platen knob to wind the paper back on to the paper roll so that the paper is withdrawn clear of the platen.

4.4 Remove the old roll of paper from the machine by pressing either of the flexible retainers of the paper roll holders at each end of the paper roll towards the side of the machine, then withdraw the paper roll and paper roll bar from its locating slots.

4.5 Remove the paper roll bar from the paper roll by depressing the spring loaded retention block located at one end of the roll bar and then withdraw the roll bar from the paper roll. Discard the paper roll, but retain the paper roll bar.

Note: The method of fitting the new paper roll into the paper roll bar and the path of the

TABLE 1 SPEED CHANGE GEARS RECOGNITION

	HOURS COUNTER		SYNCHRONOUS MOTOR		GOVERNED MOTOR	
50 BAUDS	**GEAR**	**PINION**	**GEAR**	**PINION**	**GEAR**	**PINION**
PART No.	4414/4	4403/70A	4418/16	4418/3	4418/14	4418/2
GEAR DIAMETER	31/32in.	11/32in.	137/64in.	15/16in.	149/64in.	23/32in.
No. OF TEETH	28	2	40	8	50	8
75 BAUDS						
PART No.	4414/5	4428/3A	4418/21	4418/5	4418/18	4418/4
GEAR DIAMETER	7/8in.	25/64in.	121/64in.	13/16in.	13/8in.	111/64in.
No. OF TEETH	42	2	30	9	25	6

Paper to the platen roller is dependent upon whether normally wound paper or reverse wound paper is used. Refer to Fig.2.8. which shows the path for normally wound paper. For normally wound (i.e. single-ply) paper refer to paragraph 4.6. and for reverse wound (i.e. multi-ply) paper reference should be made to paragraph 4.7.

4.6 For normally wound paper:

(a) Fit the new roll of paper into the paper roll bar by depressing the spring loaded rentention block, then slide the roll bar into the roll of paper so that the paper bears against the stop pin and that when fitted to the machine, the paper will feed from underneath the roll, also ensure that the stop pin will be located on the left, as viewed from the keyboard.

(b) Fit the paper roll bar into the locating slots, so that the stop pin is on the left. Feed the free end of the paper from the underside of the roll, over the stay rod, then over the paper jockey between the two guides.

4.7 For reverse wound paper

(a) Fit the new roll of paper into the paper roll bar by depressing the spring loaded retention block, then slide the roll bar into the roll of paper so that the paper bears against the stop pin and when fitted to the machine the paper will feed from the top of the roll, also ensure that the stop pin will be located on the left, as viewed from the keyboard.

(b) Fit the paper roll bar into the locating slots so that the stop pin is on the left.

(c) Feed the free end of the paper from the top of the roll, under the stay rod, then over the paper jockey between the two guides.

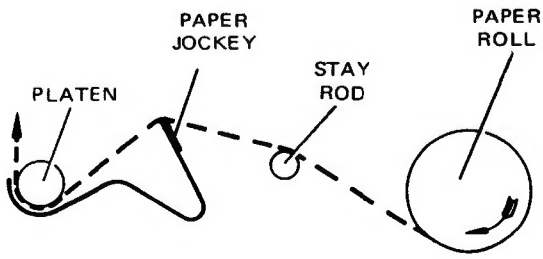

Fig. 2.8. PAPER LOADING

4.8 Feed the paper between the platen and pressure rollers until resistance is felt.

4.9 Gently pull the guide wire assembly away from the platen and turn the platen knob to feed paper between the platen and guide wire assembly.

4.10 Allow the guide wire assembly to return to its normal position.

4.11 Release the pressure roller lever and align the paper to ensure that it will feed smoothly.

4.12 Reset the pressure roller lever.

4.13 Adjust the right-hand paper guide, if necessary, by slackening its securing screw and moving the guide so that there is a gap of approximately 1/16in. between the guide and paper. Tighten the securing screw.

4.14 Tear off the free end of the paper across the serrated blade of the tear-off plate (do not attempt to tear the paper against the wire guide). Check that the dashpot lever (Fig. 2.10) is fully counter-clockwise.

4.15 Close the machine cover.

4.16 Turn the platen knob to feed the paper through the slot in the cover.

4.17 Reconnect the power plug and switch on.

4.18 Depress the line feed key two or three times and ensure that the paper feeds correctly.

5. CHANGING THE INK RIBBON

5.1 Switch off the power to the machine and disconnect the supply plug from the socket.

5.2 Open the cover lid.

5.3 Using the index or middle finger wind the old ribbon completely on the drive spool.

Note: If it is required to wind the old ribbon on to that spool which is serving as the idler, the drive must be transferred to this spool. To effect this, power must be reconnected to the machine and while the idler spindle is held with a finger, the keyboard must be operated for one or two characters. With the drive transferred continue with operations 5.1 and 5.3 as before.

5.4 Lift both spools off their spindles, remove the old ribbon from the ribbon jumper.

5.5 Detach the old ribbon from the empty spool. Attach the new ribbon to the spool by fitting the hook over the catch on the spool centre. If a two-colour ribbon is used, note that the upper half is used for outgoing messages.

5.6 Wind on sufficient tight turns, so that the ribbon button is wound on the spool.

5.7 Leave about 12 inches of tape between the two spools. Place the spools on their spindles, making certain that the ribbon feeds from the back of the spools i.e. the side nearest the platen for both spools.

5.8 Check that the ribbon is not twisted, then push the spools downward, making sure that the spools are not askew on their spindles. Turn each spool until the small hole in the spool engages with the driving pin on the spool holders.

5.9 Thread the ribbon into each side of the ribbon jumper, as shown in Fig. 2.9. then through the slots of the two guide brackets and around the guide pulleys. Wind up the spools to take up any slack ribbon.

5.10 Check that the dashpot lever (identified on Fig.2.10) is fully counter-clockwise, and then close the lid.

5.11 Turn the platen knob so that the paper is fed through the slot in the cover.

5.12 Reconnect the power plug and switch on.

5.13 Type a test message in local record and whilst doing so, ensure that the ribbon is feeding correctly.

6. RE-LOADING THE TAPE PUNCH WITH TAPE

6.1 Depress the RUN—OUT key to ensure that about two inches of tape protrudes from the lower tear-off plate.

6.2 Switch off the power to the machine and disconnect the supply plug from the socket.

6.3 Press the PERF OFF key.

6.4 Open the top of the machine cover and slide the type carriage to the right.

6.5 Tear off the tape, using the upper tear-off plate at the top of the guide channel.

6.6 Depress the TAPE RLSE key and pull the remaining length of old tape from the lower tear-off plate.

6.7 Remove the old spool of paper by withdrawing it upwards from the tape reel holder. Pull apart the two halves of the plastic reel

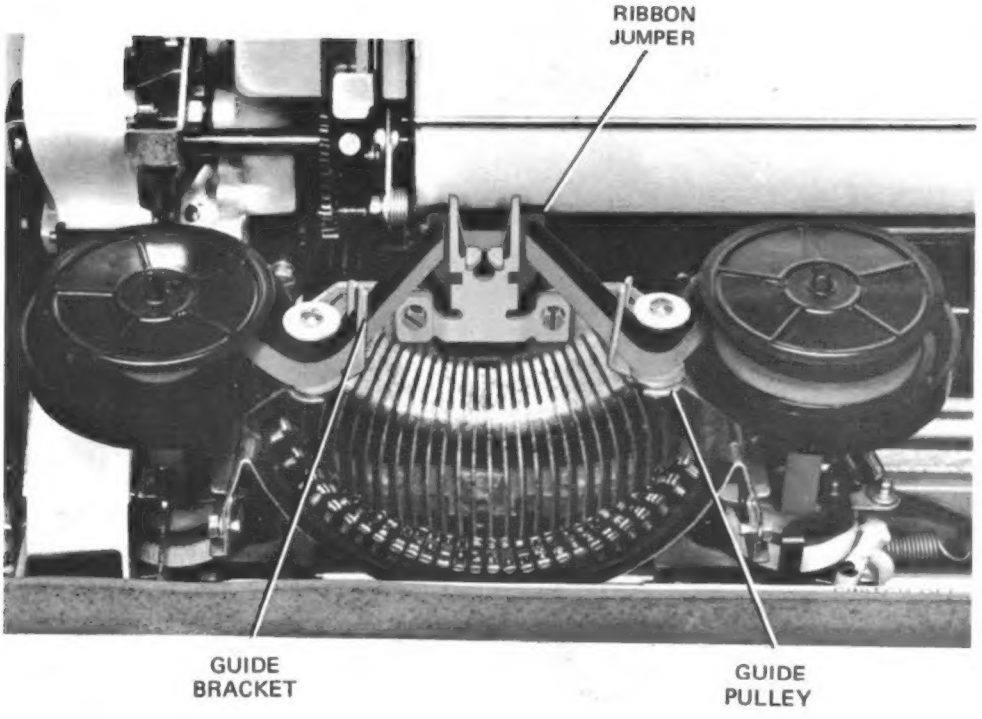

Fig. 2.9. RIBBON PATH

centrepiece and retain these items.

6.8 Fit the reel centrepiece into the new spool of tape, and then fit into the tape reel holder so the tape feeds from the top of the reel towards the keyboard, as shown in Fig. 2.10

6.9 Pass the tape over the upper guide roller and under the upper tear-off plate. Tear the tape upwards against this plate to produce an arrow-headed leading end. Pass this end over the snatch roller, behind the upper roller, over the intermediate roller and then down behined the lower roller until you feel resistance. Now press the TAPE RLSE key and continue to push the tape through until it emerges beneath the lower tear-off plate.

6.10 Check that the dashpot lever (Fig. 2.10) is fully counter-clockwise before pressing the MAN CAR RET key to bring the carriage back to the beginning of the line, then close the cover, reconnect the power supply, and press the PERF ON key.

6.11 Select any character on the keyboard, then press the RUN–OUT key and check that the new tape feeds through the machine and emerges from the lower tear-off plate.

6.12 Type a test message in local record, and ensure that the tape is feeding correctly.

7. LOADING THE TAPE READER WITH TAPE

7.1 Press the tape-gate release button to release the tape-gate.

7.2 Place the tape, with its free end pointing to the left, so that the feed hole engages with the sprocket wheel, and the group of three code holes are nearest the front of the machine.

7.3 Close the tape-gate, ensuring that it is securely latched down.

7.4 Set the machine for local working, then press the TAPE TRANS OFF key, followed by the TAPE TRANS ON key.

7.5 Check that the tape feeds through the reader and is guided by the deflector clear of the machine.

7.6 Check that the message is printed on the paper roll.

7.7 Press the TAPE TRANS OFF key to switch the reader off.

8. KEY FIELD AND MANUAL CONTROL KEYS

The standard four-row layout will have 57 operating keys and three pads (rectangular shaped keys). The

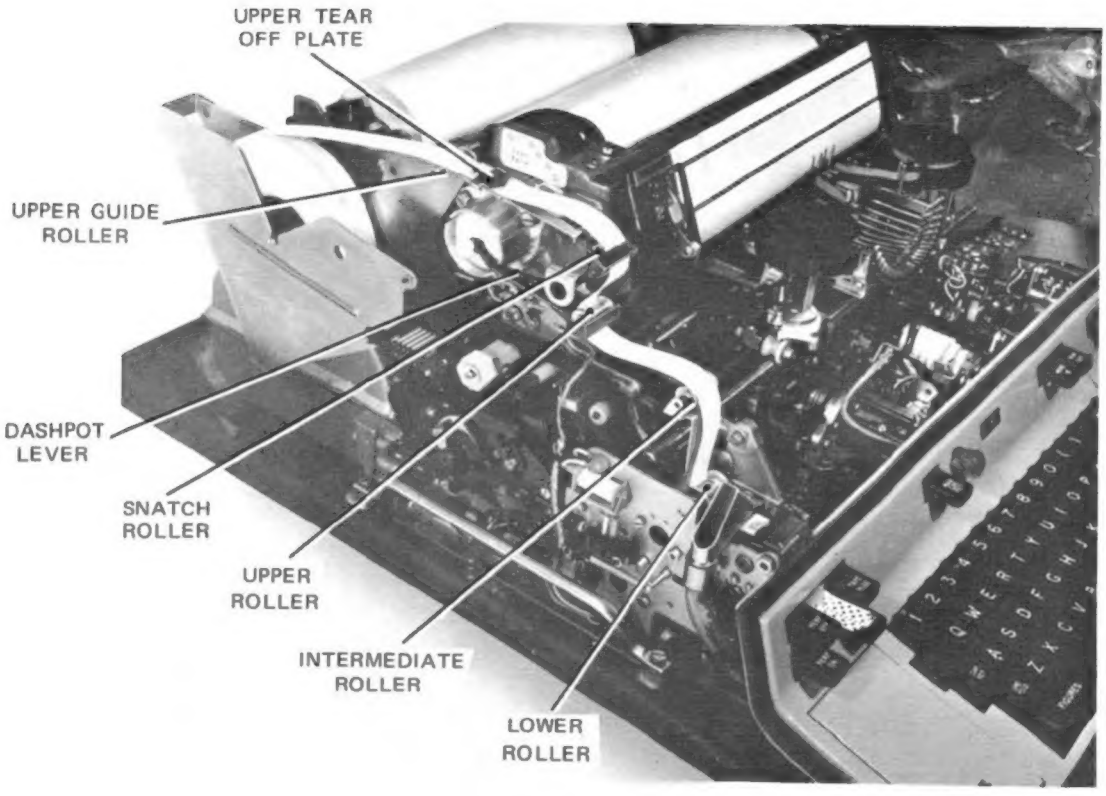

Fig. 2.10. TAPE PATH

centre pad is for space selection and the left and right pads are usually associated with figure and letter shifts respectively. The space pad and the keys concerned with carriage return and line feed are operable in either shift, otherwise figures and symbols can be selected when the relevant shift key is depressed and the letter keys are locked. In the opposite shift the reverse applies. The keyboard layout includes two spare positions which are normally filled with non-operating keybars attached to square flat topped key buttons, which fill up the mask opening. The maximum number of operating keys for a four-row layout is therefore 59 keys, and three pads. Certain machines may be equipped with a condensed four-row layout with 44 keys and one pad or a three-row layout which has 33 keys and one pad. The manual control keys are situated above the keyfield and are mainly provided for local control. The following sub-paragraphs describe these and those keys in the key field which are associated with machine functions.

8.1 KEY FIELD

Letters Pad

This controls the letter shift, when depressed it enables the letter character keys to be operated and locks the figure and symbol keys.

Figures Pad

This controls the figure shift, when depressed it enables the figure and symbol character keys to be operated and locks the letter keys.

Line Feed

The code associated with this key corresponds with the function of turning the platen roller and thus advancing the paper one line feed for each depression. This key will operate in both shifts and the movement pitch will be according to the setting of the line feed change lever.

Car Ret (Carriage Return)

The code associated with this key is concerned

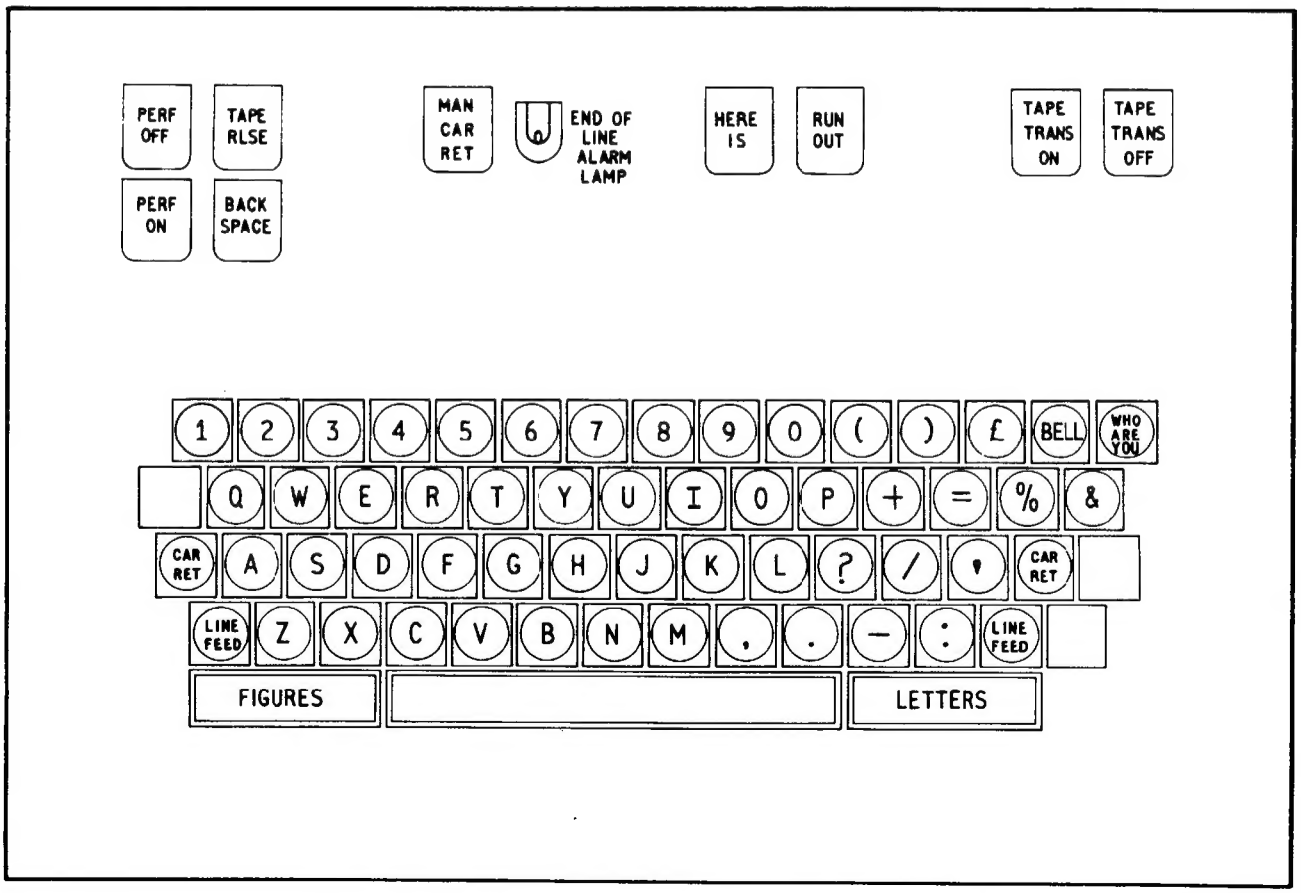

Fig. 2.11. TYPICAL KEYBOARD LAYOUT

with the carriage return function, this effects the return of the type carriage to the left-hand side of the machine, and is operative in both shifts.

Who Are You?

On depression of this Key the code sent to a distant machine will operate its answer back device. The code from the device will then be transmitted back to the interrogating machine.

All Space Key

Fitted to certain machine keyboards and usually locked in the inoperative position by a 4BA screw, this key is capable of generating an all space code, together with start and stop elements.

Bell

When this key is operated, the code sent to the distant machine can operate an alarm bell or light at that station.

8.2 MANUAL CONTROL KEYS

Run-Out

A non-locking organ type key. When depressed in conjunction with another key in the keyfield, will cause the character selected to continuously be printed or punched until either key is released.

Perf On

A locking organ type key. When depressed causes the punch to respond to incoming signals from line, or local record signals originated at the keyboard or tape reader, with the exception of certain pre-selected characters that may be suppressed.

Perf Off

A non-locking organ type key which, when depressed, releases the PERF ON key, and thus stops the operation of the punch.

Tape Rise (Release)

A non-locking organ type key which, when depressed, releases the pressure on the tape, in the tape punch, so that the tape can be fed through by hand.

Back Space

A non-locking organ type key, when depressed it backspaces the punched tape one character pitch.

Tape Trans On

A locking organ type key, will only depress when there is a tape in position, and the gate is closed. When depressed the tape reader will operate.

Tape Trans Off

A non-locking organ type key, will on depression, release the TAPE TRANS ON key and hence stop the reader.

Note: If the reader gate is opened during operation, the reader will automatically stop and will not restart until the tape gate is closed with tape in, and the locked TAPE TRANS ON key setting is cancelled (by the TAPE TRANS OFF key) and re-selected.

Here is

A non-locking organ type key which, when depressed, transmits the answer back character sequence to line and prints it in local record.

Note: The keyboard is locked throughout an answer back transmission sequence and is released during the time that the 20th character is read off. Operation of a key will therefore be ineffective unless it is maintained depressed until after the sequence is ended; in these circumstances the 20th character (usually Letters Shift) will be lost.